Space Weather Forecast

Issued on Thursday, 27 June 2024 at 13:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of Moderate-class flares. Chance of Active to G1 Minor Storms, mainly day 3 (29 Jun).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with occasional low level Common-class flares. The strongest flare was at 27/0428 UTC from a region near the east limb. This is a fairly simple region magnetically, but may reveal more complexity as it rotates further onto the visible disc. Similarly complex is the wide sunspot group in the southeast. It is comprised of a number of small spots with mixed polarities, but with some slow decay observed. There are ten regions on the disc, however all other regions remained largely stable and are either unipolar mature spots or simple bipolar regions.

No Earth-directed CMEs (Coronal Mass Ejections) occurred, although a few limb-based eruptions were observed.

Solar Wind / Geomagnetic Activity: Solar wind speeds were at background levels through the period, but potentially with minor enhancements. Interplanetary Magnetic Field was largely weak, but became persistently moderate from 27/0713 UTC. Its north-south component varied weakly for much of the period, but generally trended to a moderately northward direction from 27/0630 UTC. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity expected with a chance of isolated Moderate flares.

Solar Wind / Geomagnetic Activity: Three CMEs feature in the forecast period. The first from 23 Jun is expected to miss, but may have a glancing impact on day 1 (27 Jun). The second from early on 25 Jun is likely have a glancing impact on day 2 (28 Jun). The third CME from late on 25 Jun is likely to arrive late day 3 or early day 4 (29-30 Jun), but any impact is expected to be rather weak and slow. Otherwise, solar winds are expected to remain indicative of a slow background conditions. Geomagnetic activity is expected to be Quiet overall with Unsettled intervals, but increasing to Active to G1 Minor storm with any CME arrivals, most likely day 2-3 (28-29 Jun).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background levels, but with a very slight chance of exceeding the S1/Minor Storm threshold should any notable flares occur from the numerous sunspots that currently occupy the visible disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	25	40	25
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	45	45	45	45
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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